

IN THE CLAIMS:

Please amend the claims as follows. The claims are in the format as required by 35 C.F.R. § 1.121.

1. (Currently Amended) An image processing method using a computer including a CPU and a memory, comprising:

causing the CPU to store data on an object represented by a plurality of polygons in the memory;

causing the CPU to extract ~~extracting~~ vertex coordinates of a first triangular-shaped polygon included in the object, the first triangular shaped polygon being one of the plurality of polygons;

causing the CPU to set ~~setting~~ a region surrounding the first triangular shaped polygon on the basis of the vertex coordinates;

causing the CPU to measure ~~measuring~~ a first distance from a lattice point included in the region to the first triangular-shaped polygon; -and

causing the CPU to determine whether the region includes a second triangular-shaped polygon or not, the second triangular-shaped polygon being one of the plurality of polygons;

in a case where the region includes the second triangular-shaped polygon, causing the CPU to determine whether a second distance from the lattice point to the second triangular-shaped polygon is measured or not, the second triangular-shaped polygon being included in the object;

in a case where the second distance is measured and the first distance differs from the second distance, causing the CPU to select smaller one of the first and second distances;

in a case where the second distance is measured and the first distance is same as the second distance, causing the CPU to compare a first displacement between a first projection point of the lattice point on a first X-Y plane and a nearest lattice point with a second displacement between a second projection point of the lattice point on a second X-Y plane and a nearest lattice point, the first X-Y plane being a coordinate including a plane of the first triangular-shaped polygon, the second X-Y plane being a coordinate including a plane of the second triangular-shaped polygon;

causing the CPU to select one of the first and second distance based on a comparison result between the first and second displacements;

causing the CPU to draw~~drawing~~ a graphic figure on the basis of selected one of the first and second distances~~the distance from the lattice point to the triangular-shaped polygon;~~ and

causing the CPU to output the drawn graphic figure as the data on the object.

2. (Currently Amended) The method according to claim 1, wherein the graphic figure is drawn as a set of points at which the selected one of the first and second distances~~to the triangular-shaped polygon~~ is zero.

3. (Currently Amended) The method according to claim 1, wherein the first and second distances are~~distance from the lattice point to the triangular-shaped polygon~~ is given as data which is accompanied with a sign indicative of whether the lattice point is outside or inside the object~~graphic figure drawn by the polygon~~.

4. (Currently Amended) The method according to claim 1, further comprising converting all of ~~[[a]] the plurality of polygons that form the graphic figure~~ into triangular-shaped polygons, prior to the step of extracting the vertex coordinates of the first triangular-shaped polygon.

5. (Currently Amended) The method according to claim 1, further comprising:

dividing a drawing region of the ~~graphic figure, which is drawn by the triangular-shaped polygon,~~ object into a plurality of meshes; and

further dividing the mesh, in which an outline of the ~~graphic figure~~ object is present, into a plurality of meshes,

wherein said region is set for each of the meshes.

6. (Currently Amended) The method according to claim 2, wherein a surface of the graphic figure is drawn by transforming a parametric representation using the polygons to an implicit-function representation.

7. (Currently Amended) A computer program product for processing image data, comprising:

means for instructing a computer to extract vertex coordinates of a triangular-shaped polygon;

means for instructing a computer to store data on an object represented by a plurality of polygons in the memory;

means for instructing a computer to extract vertex coordinates vertex coordinates of a first triangular-shaped polygon included in the object, the first triangular shaped polygon being one of the plurality of polygons;

means for instructing the computer to generate a region surrounding the first triangular shaped polygon on the basis of the vertex coordinates;

means for instructing the computer to measure a first distance from a lattice point included in the region to the first triangular-shaped polygon;-and

means for instructing the computer to determine whether the region includes a second triangular-shaped polygon or not, the second triangular-shaped polygon being one of the plurality of polygons;

means for instructing the computer to determine whether a second distance from the lattice point to the second triangular-shaped polygon is measured or not, the second triangular-shaped polygon being included in the object in a case where the region includes the second triangular-shaped polygon;

means for instructing the computer to select smaller one of the first and second distances in a case where the second distance is measured and the first distance differs from the second distance;

means for instructing the computer to compare a first displacement between a first projection point of the lattice point on a first X-Y plane and a nearest lattice point with a second displacement between a second projection point of the lattice point on a second X-Y plane and a nearest lattice point in a case where the second distance is measured and the first distance is same as the second distance, the first X-Y plane being a coordinate including a plane of the first triangular-shaped polygon, the second X-Y plane being a coordinate including a plane of the second triangular-shaped polygon;

means for instructing the computer to select one of the first and second distance based on a comparison result between the first and second displacements;

means for instructing the computer to draw a graphic figure on the basis of selected one of the first and second distances ~~the distance from the lattice point to the triangular-shaped polygon;~~ and

means for instructing the computer to output the drawn graphic figure as the data on the object.

8. (Currently Amended) The product according to claim 7, wherein said means for instructing the computer to draw the graphic figure is configured such that the graphic figure is drawn as a set of points at which the selected one of the distances ~~distance to the triangular-shaped polygon, which is measured by said means for instructing the computer to measure the distance,~~ is zero.

9. (Currently Amended) The product according to claim 7, wherein said means for instructing the computer to measure the first distance is configured such that ~~the~~ a distance from the lattice point to the first triangular-shaped polygon is given as data which is accompanied with a sign indicative of whether the lattice point is outside or inside the object ~~graphic figure drawn by the polygon.~~

10. (Currently Amended) The product according to claim 7, further comprising a means for instructing the computer to convert all of ~~[[a]]~~ the plurality of polygons ~~which form the graphic figure~~ into triangular-shaped polygons, before the vertex coordinates of the first triangular-shaped polygon are extracted ~~by the means for instructing the computer to extract the vertex coordinates of the triangular-shaped polygon.~~

11. (Currently Amended) The product according to claim 7, further comprising:

means for instructing the computer to divide an image region including the ~~graphic figure, which is represented by the triangular-shaped polygon,~~ object into a plurality of meshes; and

means for instructing the computer to further divide the mesh, in which an outline of the ~~graphic figure~~ object is present, into a plurality of meshes,

wherein the means for instructing the computer to generate the region is configured such that the region is set for each of the meshes.

12. (Currently Amended) The product according to claim 8, wherein
a surface of the graphic figure, which is drawn by the means for instructing the computer to draw the graphic figure, is drawn by transforming a parametric representation using the polygons to an implicit-function representation.

13. (Currently Amended) An image processing apparatus comprising:

an input unit configured to receive polygon data on an object represented by a plurality of polygons;

a processing unit configured to generate a region surrounding ~~an individual polygon,~~
~~which is represented by the polygon data~~ a first one of the polygons,

measure a first distance from a lattice point included in the region to the first one of the polygons,

determine whether the region includes a second triangular-shaped polygon or not,

determine whether a second distance from the lattice point to the second triangular-shaped polygon is measured or not,

select smaller one of the first and second distances in a case where the second distance is measured and the first distance differs from the second distance;

compare a first displacement between a first projection point of the lattice point on a first X-Y plane and a nearest lattice point with a second displacement between a second projection point of the lattice point on a second X-Y plane and a nearest lattice point in a case where the second distance is measured and the first distance is same as the second distance, the first X-Y plane being a coordinate including a plane of the first triangular-shaped polygon, the second X-Y plane being a coordinate including a plane of the second triangular-shaped polygon;

select one of the first and second distance based on a comparison result between the first and second displacements, and

draw a graphic figure on the basis of selected one of the first and second distances
~~the measured distance~~ by an implicit-function representation; and
an outputting unit configured to display the graphic figure that is obtained by the implicit-function representation.

14. (Currently Amended) The apparatus according to claim 13, wherein the processing unit draws the graphic figure as a set of points at which the selected one of the first and second distances to the polygon is zero.

15. (Currently Amended) The apparatus according to claim 13, wherein the processing unit provides the first and second distances ~~from the lattice point to the polygon~~ as data which is accompanied with a sign indicative of whether the lattice point is outside or inside the object
~~graphic figure that is drawn by the polygon.~~

16. (Original) The apparatus according to claim 13, wherein the processing unit converts all of the polygons into triangular-shaped polygons, extracts vertex coordinates of the triangular-shaped polygon, and generates the region based on the vertex coordinates.

17. (Currently Amended) The apparatus according to claim 13, wherein the processing unit divides an image region of the object ~~graphic figure that is drawn by the polygon~~, into a plurality of meshes, further divides the mesh, in which an outline of the object ~~graphic figure is present~~, into a plurality of meshes, and sets said region for each of the meshes.

18. (New) The method according to claim 1, wherein if the first displacement is smaller than the second displacement, the CPU selects the first distance,

if the second displacement is smaller than the first displacement, the CPU selects the second distance.

19. (New) The product according to claim 7, wherein if the first displacement is smaller than the second displacement, the computer selects the first distance,

if the second displacement is smaller than the first displacement, the computer selects the second distance.

20. (New) The apparatus according to claim 13, wherein if the first displacement is smaller than the second displacement, the processing unit selects the first distance,

if the second displacement is smaller than the first displacement, the processing unit selects the second distance.